

WHAT IS CLAIMED IS:

1. A liquid crystal display comprising:

a ferroelectric liquid crystal material which is held between a pair of electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied;

a signal applying section which applies an image signal to a pixel of said liquid crystal material for every two fields forming one frame; and

a polarity controller which reverses the polarity of the image signal in one frame period, said polarity controller being configured that the polarity of the image signal is reversed in a selected one of first and second polarity control manners, said first polarity control manner initiating an amplitude change of the image signal from a polarity in which a larger response of said liquid crystal material is obtainable, said second polarity control manner initiating an amplitude change of the image signal from a polarity in which a smaller response of said liquid crystal material is obtainable, and said selected polarity control manner being smaller in the total of brightness deviation generated in a frame immediately after the amplitude change for each of predetermined brightness transitions.

2. A liquid crystal display comprising:

a ferroelectric liquid crystal material which is

0912743-083101

held between a pair of electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied;

5 a signal applying section which applies an image signal to a pixel of said liquid crystal material for every three or more fields forming one frame; and

10 a polarity controller which reverses the polarity of the image signal in one frame period, said polarity controller being configured to apply the image signal of a first polarity for each field in a first one of two successive periods obtained by dividing the frame period, and to apply the image signal of a second polarity opposite to the first polarity and of fixed amplitudes for each subsequent field in a second one of
15 the two successive periods.

3. The liquid crystal display according to claim 2, wherein said fixed amplitudes depend on the amplitude of the image signal for the next frame.

20 4. The liquid crystal display according to claim 2, wherein said second polarity is a polarity in which a smaller optical response of said ferroelectric liquid crystal material is obtainable.

25 5. The liquid crystal display according to claim 2, wherein said second period includes at least two consecutive fields of three or more fields forming said one frame period, and said first period includes at least one field which remains in said three or more

0942743-083101
101280-242266

fields.

6. The liquid crystal display according to claim 2, wherein said second period includes at least two consecutive fields of three or more fields forming
5 said one frame period and having different time lengths, and said first period includes at least one field which remains in said three or more fields.

7. The liquid crystal display according to claim 6, wherein said second polarity is a polarity in
10 which a smaller optical response of said ferroelectric liquid crystal material is obtainable.

8. A liquid crystal display comprising:
a first substrate including a plurality of pixel electrodes arranged substantially in a matrix, a
15 plurality of scanning lines disposed along rows of said pixel electrodes, a plurality of signal lines disposed along columns of said pixel electrodes, and a plurality of switching elements each of which is disposed near
20 an intersections of corresponding scanning and signal lines and driven via the corresponding scanning line to apply the potential of the corresponding signal line to a corresponding pixel electrode;

a second substrate including a counter electrode facing said pixel electrodes;

25 a driving section which drives one of said scanning lines sequentially selected for each horizontal scanning period, and said signal lines

0942743-083101

during said each horizontal scanning period;

a liquid crystal cell including a ferroelectric liquid crystal material which is held between said first and second electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied between said pixel and counter electrodes; and

a liquid crystal controller which controls said driving section to supply an image signal to each signal line for every two fields forming one frame and reverse the polarity of the image signal in one frame period, said liquid crystal controller being configured that the polarity of the image signal is reversed in a selected one of first and second polarity control manners, said first polarity control manner initiating an amplitude change of the image signal from a polarity in which a larger response of said liquid crystal material is obtainable, said second polarity control manner initiating an amplitude change of the image signal from a polarity in which a smaller response of said liquid crystal material is obtainable, and said selected polarity control manner being smaller in the total of brightness deviation generated in a frame immediately after the amplitude change for each of predetermined brightness transitions.

9. A liquid crystal display comprising:

a first substrate including a plurality of pixel

0912743-083107

electrodes arranged substantially in a matrix, a plurality of scanning lines disposed along rows of said pixel electrodes, a plurality of signal lines disposed along columns of said pixel electrodes, and a plurality of switching elements each of which is disposed near an intersections of corresponding scanning and signal lines and driven via the corresponding scanning line to apply the potential of the corresponding signal line to a corresponding pixel electrode;

a second substrate including a counter electrode facing said pixel electrodes;

a driving section which drives one of said scanning lines sequentially selected for each horizontal scanning period, and said signal lines during said each horizontal scanning period;

a liquid crystal cell including a ferroelectric liquid crystal material which is held between said first and second electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied between said pixel and counter electrodes; and

a liquid crystal controller which controls said driving section to supply an image signal to each signal line for every three or more fields forming one frame and reverse the polarity of the image signal in one frame period, said polarity controller being configured to apply the image signal of a first

00942743-003101

polarity for each field in a first one of two successive periods obtained by dividing the frame period, and to apply the image signal of a second polarity opposite to the first polarity and of fixed amplitudes for each subsequent field in a second one of the two successive periods.

10. The liquid crystal display according to claim 9, wherein said fixed amplitudes depend on the amplitude of the image signal for the next frame.

11. The liquid crystal display according to claim 9, wherein said second polarity is a polarity in which a smaller optical response of said ferroelectric liquid crystal material is obtainable.

12. The liquid crystal display according to claim 9, wherein said second period includes at least two consecutive fields of three or more fields forming said one frame period, and said first period includes at least one field which remains in said three or more fields.

13. The liquid crystal display according to claim 9, wherein said second period includes at least two consecutive fields of three or more fields forming said one frame period and having different time lengths, and said first period includes at least one field which remains in said three or more fields.

14. The liquid crystal display according to claim 13, wherein said second polarity is a polarity in

0942743-083101

which a smaller optical response of said ferroelectric liquid crystal material is obtainable.

15. A driving method for a liquid crystal display having a ferroelectric liquid crystal material which is held between a pair of electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied, said method comprising:

application of an image signal to a pixel of said liquid crystal material for every two fields forming one frame; and

polarity control to reverse the polarity of the image signal in one frame period, said polarity of the image signal being reversed in a selected one of first and second polarity control manners, said first polarity control manner initiating an amplitude change of the image signal from a polarity in which a larger response of said liquid crystal material is obtainable, said second polarity control manner initiating an amplitude change of the image signal from a polarity in which a smaller response of said liquid crystal material is obtainable, and said selected polarity control manner being smaller in the total of brightness deviation obtained in a frame immediately after the amplitude change for each of predetermined brightness transitions.

16. A driving method for a liquid crystal display having a ferroelectric liquid crystal material which is

0912743-083101

held between a pair of electrode substrates and whose optical response is asymmetric with respect to the polarity of a voltage applied, said method comprising:

5 application of an image signal to a pixel of said liquid crystal material for every three or more fields forming one frame; and

10 polarity control to reverse the polarity of the image signal in one frame period, said image signal of a first polarity being applied for each field in a first one of two successive periods obtained by dividing the frame period, and said image signal of a second polarity opposite to the first polarity and of fixed amplitudes being applied for each subsequent field in a second one of the two successive periods.

15 17. The driving method according to claim 16, wherein said fixed amplitudes depend on the amplitude of the image signal for the next frame.

20 18. The driving method according to claim 16, wherein said second polarity is a polarity in which a smaller optical response of said ferroelectric liquid crystal material is obtainable.

25 19. The driving method according to claim 16, wherein said second period includes at least two consecutive fields of three or more fields forming said one frame period, and said first period includes at least one field which remains in said three or more fields.

05942743-083101

20. The driving method according to claim 16,
wherein said second period includes at least two
consecutive fields of three or more fields forming said
one frame period and having different time lengths, and
5 said first period includes at least one field which
remains in said three or more fields.

21. The driving method according to claim 20,
wherein said second polarity is a polarity in which a
smaller optical response of said ferroelectric liquid
10 crystal material is obtainable.

0942743-083101